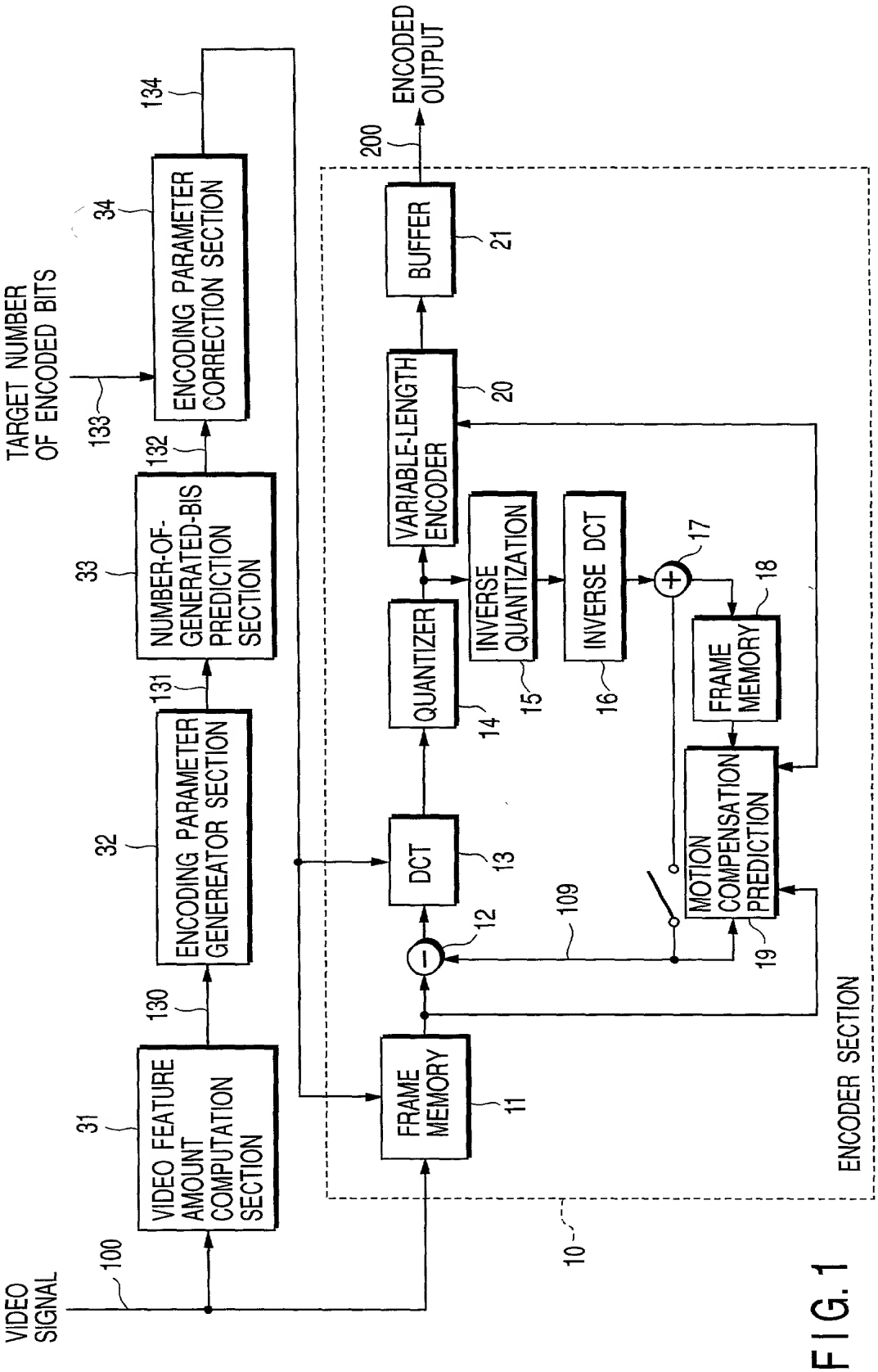
VIDEO SIGNAL
100
VIDEO FEATURE AMOUNT COMPUTATION SECTION
31
ENCODING PARAMETER GENEREATOR SECTION
32
NUMBER-OF-GENERATED-BIS PREDICTION SECTION
33
ENCODING PARAMETER CORRECTION SECTION
34
TARGET NUMBER OF ENCODED BITS
133
130
131
132
134
FRAME MEMORY
11
DCT
13
QUANTIZER
14
INVERSE QUANTIZATION
15
INVERSE DCT
16
VARIABLE-LENGTH ENCODER
20
BUFFER
21
ENCODED OUTPUT
200
12
109
17
18
FRAME MEMORY
MOTION COMPENSATION PREDICTION
19
10
ENCODER SECTION

FIG. 1

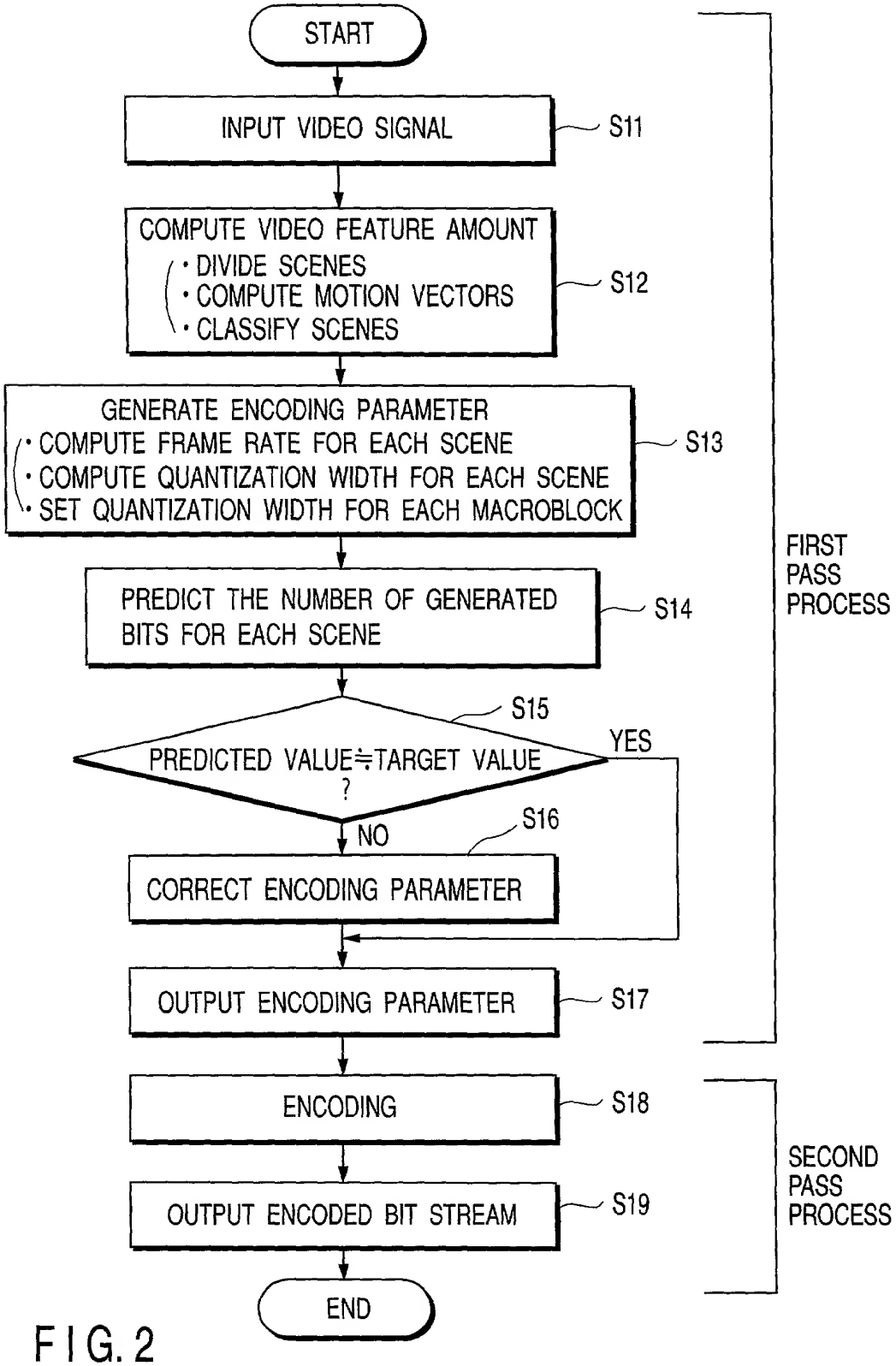
START
INPUT VIDEO SIGNAL
S11
COMPUTE VIDEO FEATURE AMOUNT
• DIVIDE SCENES
• COMPUTE MOTION VECTORS
• CLASSIFY SCENES
S12
GENERATE ENCODING PARAMETER
• COMPUTE FRAME RATE FOR EACH SCENE
• COMPUTE QUANTIZATION WIDTH FOR EACH SCENE
• SET QUANTIZATION WIDTH FOR EACH MACROBLOCK
S13
PREDICT THE NUMBER OF GENERATED BITS FOR EACH SCENE
S14
S15
PREDICTED VALUE≒TARGET VALUE ?
YES
NO
S16
CORRECT ENCODING PARAMETER
OUTPUT ENCODING PARAMETER
S17
FIRST PASS PROCESS
ENCODING
S18
OUTPUT ENCODED BIT STREAM
S19
SECOND PASS PROCESS
END

FIG. 2

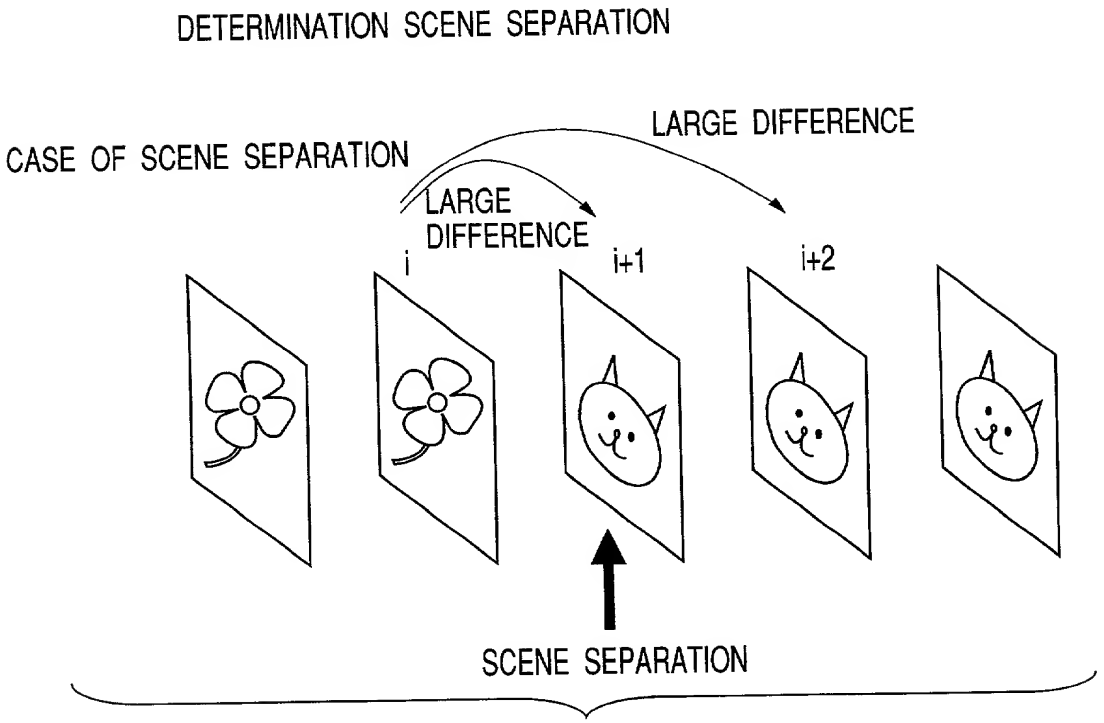
DETERMINATION SCENE SEPARATION
CASE OF SCENE SEPARATION
LARGE DIFFERENCE
LARGE DIFFERENCE
i
i+1
i+2
SCENE SEPARATION

FIG. 3A

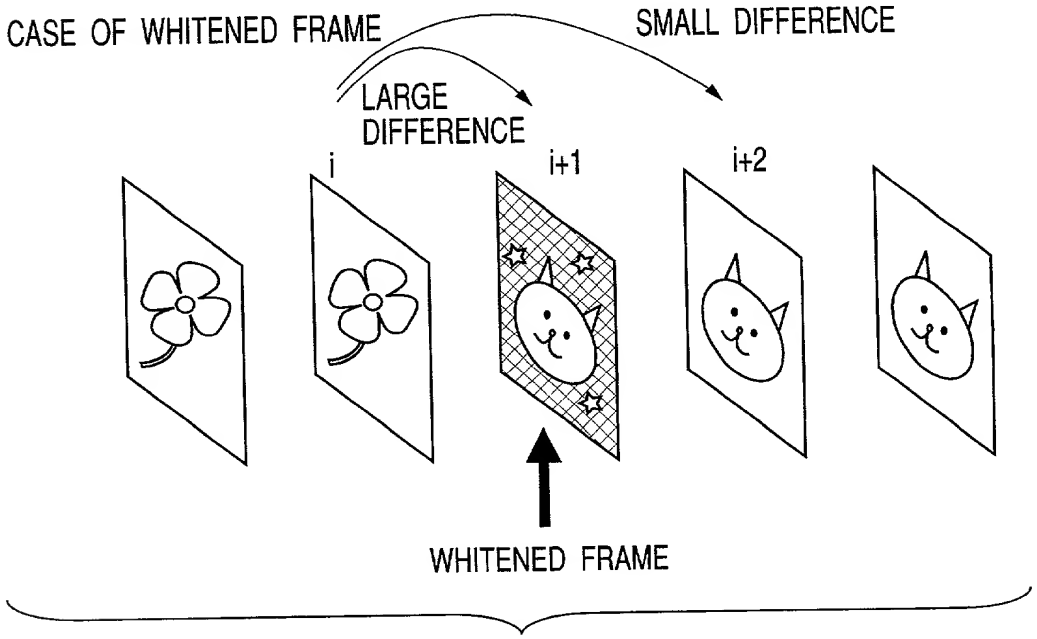
CASE OF WHITENED FRAME
SMALL DIFFERENCE
LARGE DIFFERENCE
i
i+1
i+2
WHITENED FRAME

FIG. 3B

FEW MOTION VECTORS

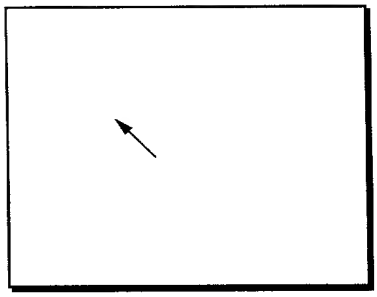

FIG. 4A

MOTION VECTORS OF THE SAME DIRECTION AND MAGNITUDE ARE DISTRIBUTED ALL OVER SCREEN

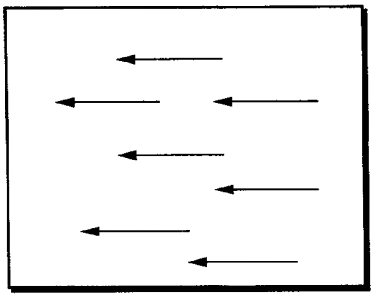

FIG. 4B

VECTORS APPEAR ONLY IN PARTICULAR PORTION OF FRAME

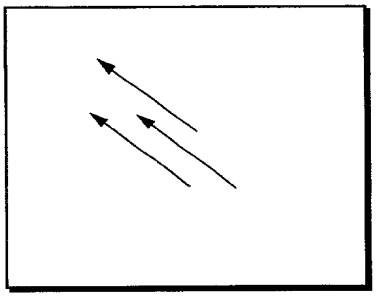

FIG. 4C

VECTORS ARE RADIALLY DISTRIBUTED WITHIN FRAME

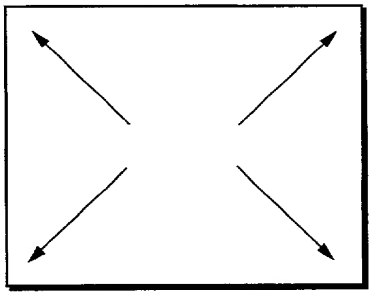

FIG. 4D

MANY MOTION VECTORS RUN IN DIFFERENT DIRECTIONS WITHIN FRAME

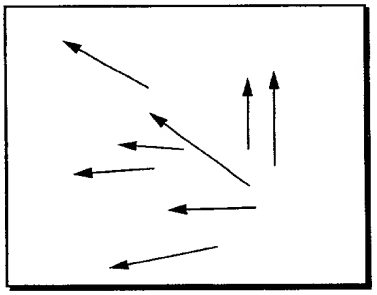

FIG. 4E

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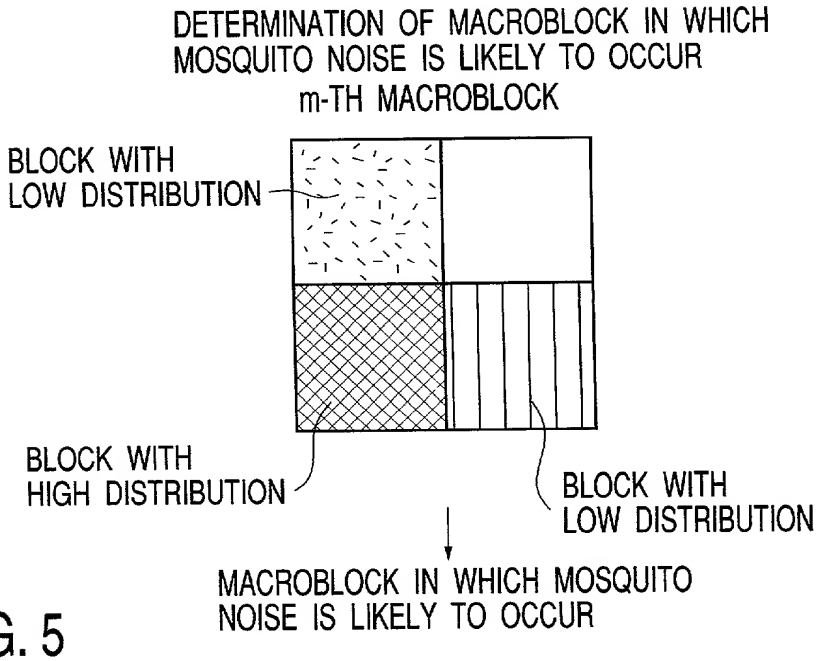

FIG. 5

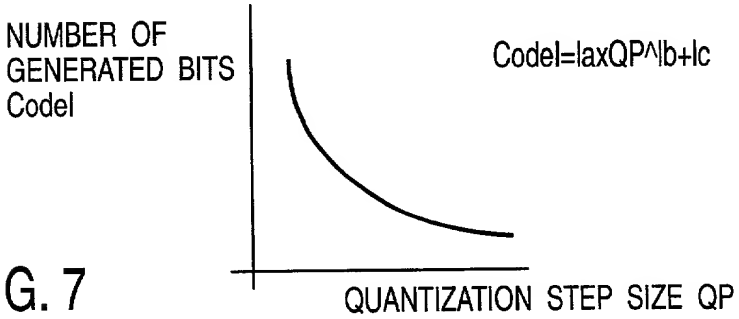

FIG. 7

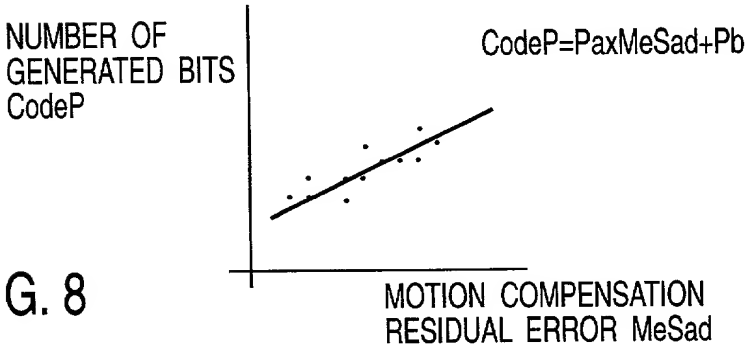

FIG. 8

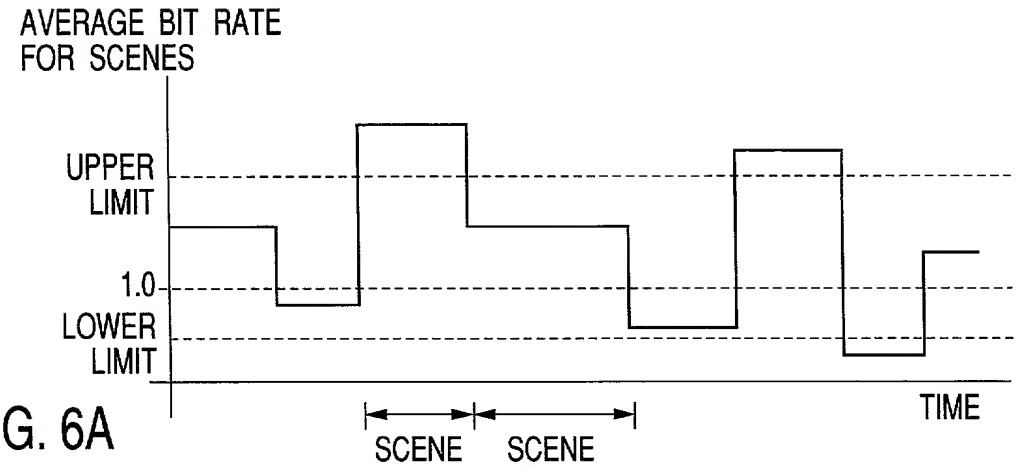

FIG. 6A

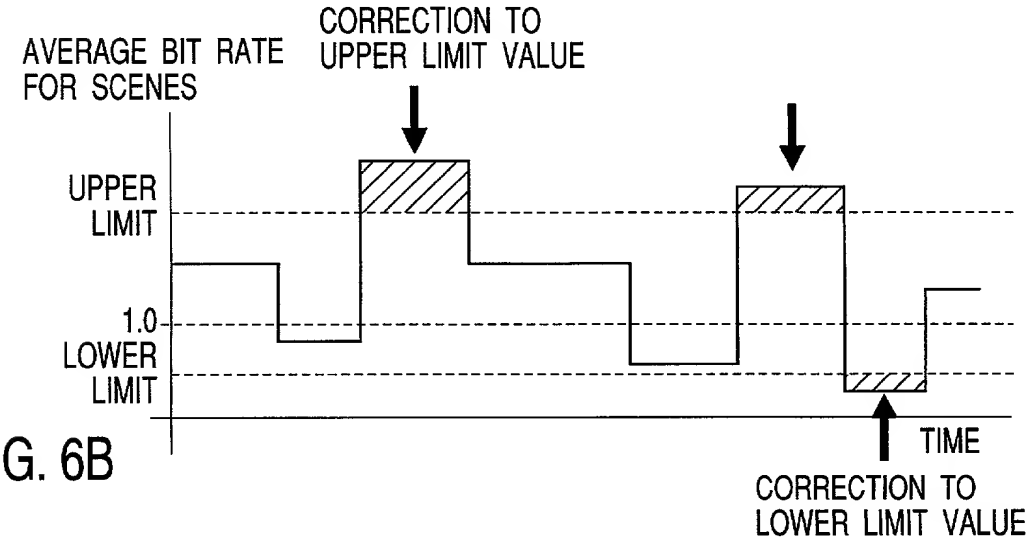

FIG. 6B

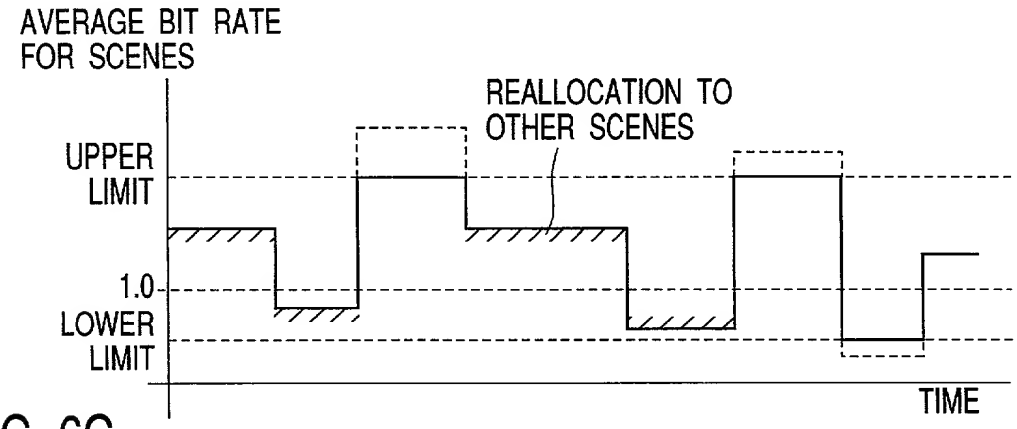

FIG. 6C

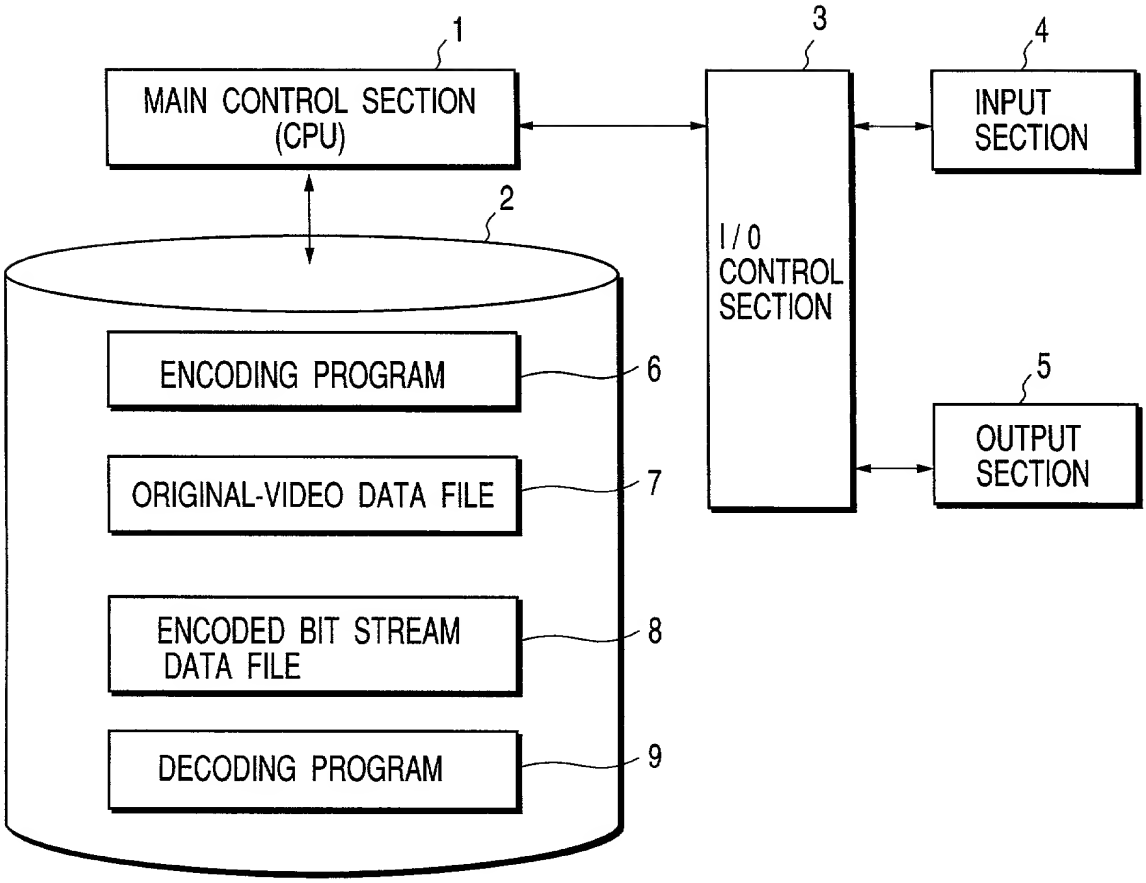
1
MAIN CONTROL SECTION (CPU)
2
3
I/O CONTROL SECTION
4
INPUT SECTION
5
OUTPUT SECTION
ENCODING PROGRAM
6
ORIGINAL-VIDEO DATA FILE
7
ENCODED BIT STREAM DATA FILE
8
DECODING PROGRAM
9

FIG. 9

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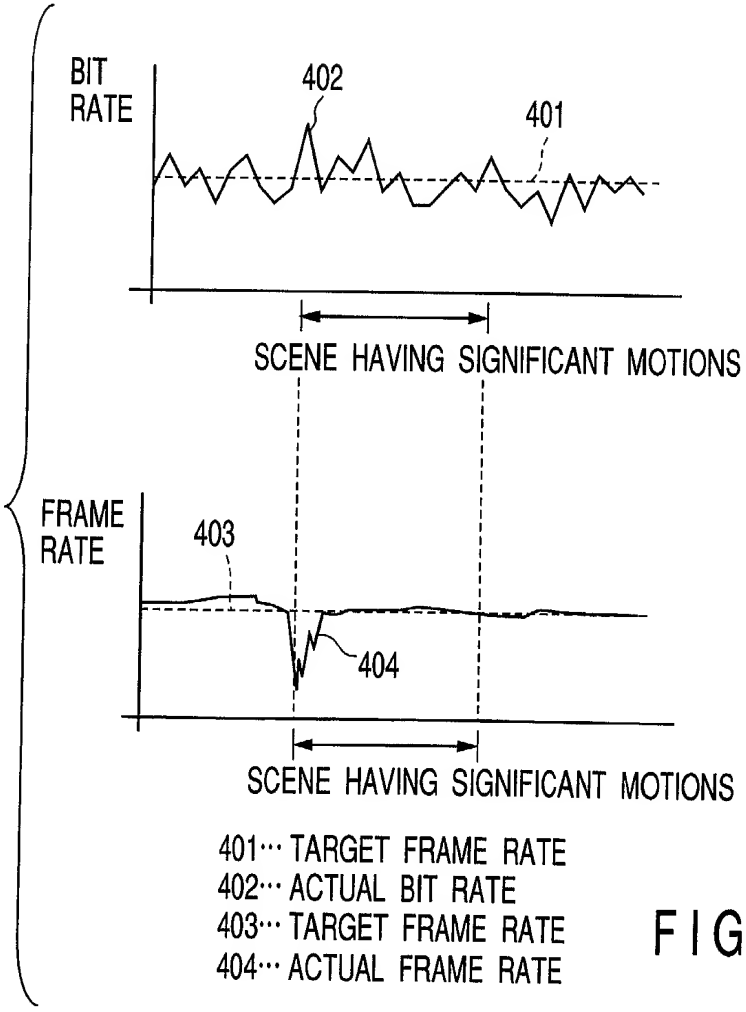

FIG. 10A
PRIOR ART

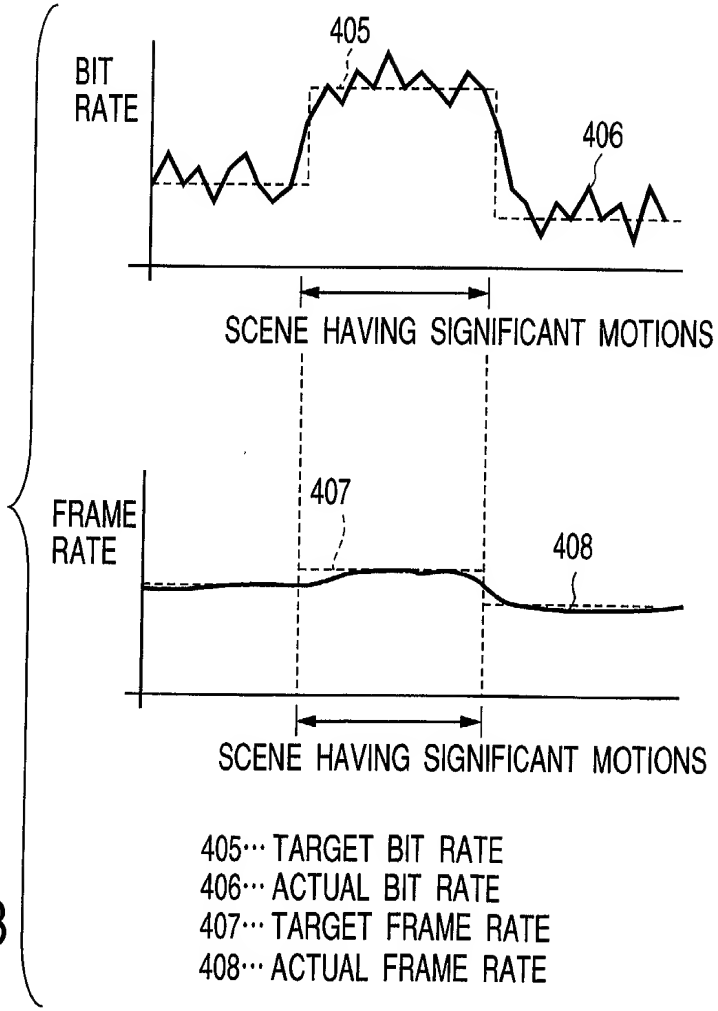

FIG. 10B

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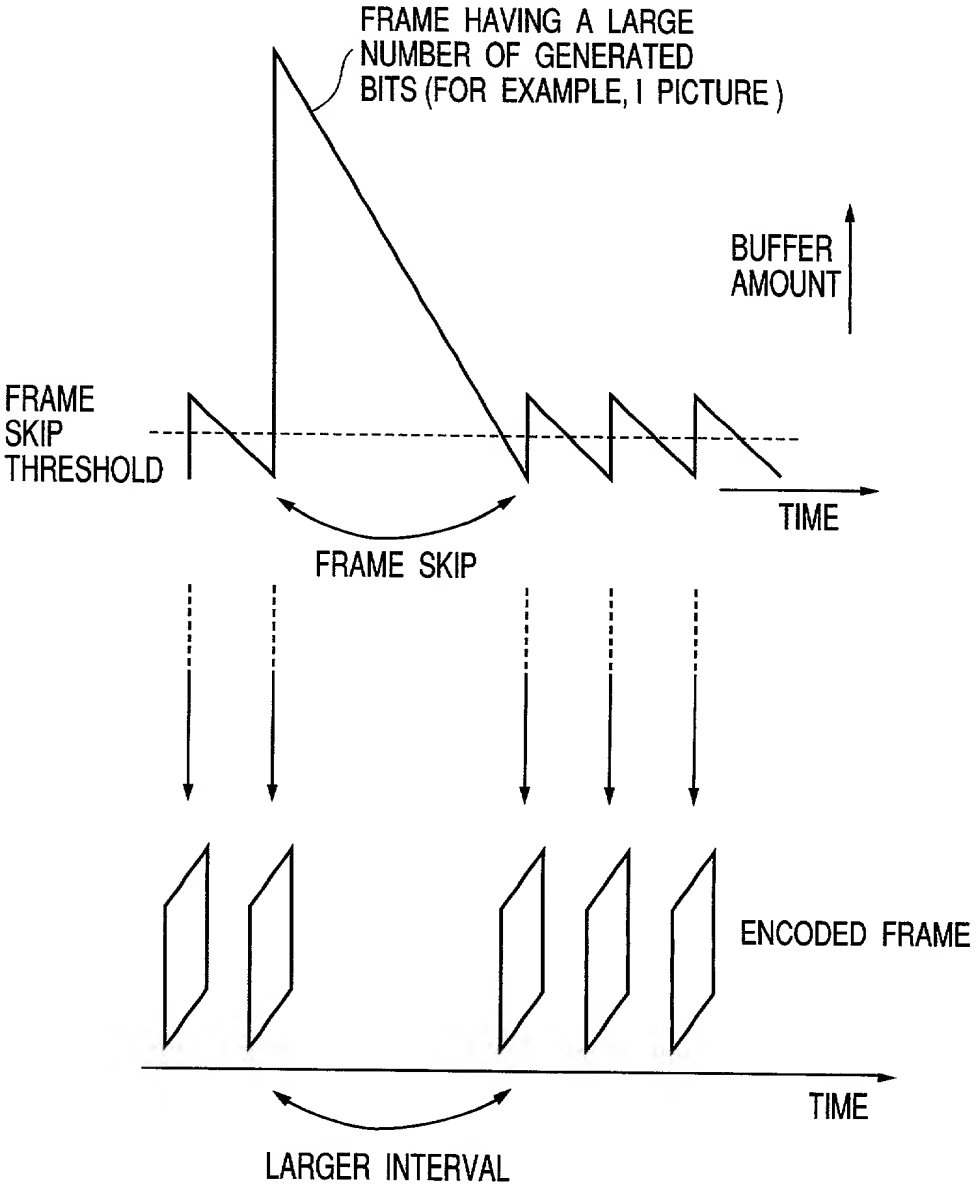

FIG. 11 PRIOR ART